

**IN THE TITLE:**

Amend the title to:

--Fluorescent Markers Comprising Functionalized Thiophene--.

**IN THE CLAIMS:**

Cancel claims 8-13:

Amend claims 1-7 as follows:

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B1  
1. (Amended) Thiophene oligomers characterized in that they have at least one functional group able to form a covalent bond with biological molecules and are excitable in the visible and ultraviolet light region without altering the biological activity of the biological molecules..

2. (Amended) Thiophene oligomers according to claim 1, comprising between 2 and 5 thiophene rings.

3. (Amended) Thiophene oligomers according to claim 2, comprising between 3 and 4 thiophene rings.

4. (Amended) Thiophene oligomers according to claim 1, where the functional group is selected from the group consisting of NH<sub>2</sub>, CHO, COOH, SH and NCS.

5. (Amended) Thiophene oligomers according to claim 4, where the functional group is NCS.

6. (Amended) Thiophene oligomers according to claim 5, where the functional group NCS is bound to the oligomer by means of an alkyl spacer comprising from 2 to 4 carbon atoms.

7. (Amended) Thiophene oligomers according to claim 6, where the alkyl spacer is selected from the group consisting of CH<sub>2</sub>CH<sub>2</sub>- and (CH<sub>3</sub>)<sub>2</sub>Si-CH<sub>2</sub>-.

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8. (Canceled)

9. (Canceled)

10. (Canceled)

11. (Canceled)

12. (Canceled) 


13. (Canceled) 

Add new claims 14-26:

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14. A method of detecting molecules comprising:

- a) providing thiophene oligomers according to claim 1;
- b) covalently bonding the thiophene oligomers to the biological molecules; and
- c) detecting fluorescence of the bound thiophene oligomers.

 15. The method of claim 14, where the biological molecules are selected from the group consisting of proteins, polyclonal antibodies, fractions of polyclonal antibodies, monoclonal antibodies, fractions of monoclonal antibodies, nucleic acids, oligonucleotides, hormones, medicines, drugs, and non-proteic chemical neurotransmitters.

16. The method of claim 14, where detecting fluorescence comprises performing one or more than one procedure selected from the group consisting of spectrometry, spectrofluorimetry, flow and static cytometry, fluorescence microscopy and gel electrophoresis.

17. The method of claim 14, where the thiophene oligomers provided comprise a plurality of thiophene oligomers with different emission frequencies, and where detecting fluorescence comprises simultaneously exciting the thiophene oligomers, through one or more than one emissive radiation source.

18. A conjugate comprising a thiophene oligomer according to claim 1 covalently bound to a biological molecule.


19. Thiophene oligomers excitable in the visible and ultraviolet light region comprising at least one functional NCS group able to form a covalent bond with organic molecules, biological molecules or both.

20. Thiophene oligomers according to claim 19, where the functional NCS group is bound to the oligomer by an alkyl spacer comprising from 2 to 4 carbon atoms.

21. Thiophene oligomers according to claim 20, where the alkyl spacer is selected from the group consisting of  $\text{CH}_2\text{CH}_2$ - and  $(\text{CH}_3)_2\text{Si-CH}_2$ -.

22. A method of detecting molecules comprising:

- a) providing thiophene oligomers according to claim 19;
- b) covalently bonding the thiophene oligomers to the molecules; and
- c) detecting fluorescence of the bound thiophene oligomers.

 23. The method of claim 22, where the molecules are selected from the group consisting of proteins, polyclonal antibodies, fractions of polyclonal antibodies, monoclonal antibodies, fractions of monoclonal antibodies, nucleic acids, oligonucleotides, hormones, medicines, drugs, and non-proteic chemical neurotransmitters.

24 The method of claim 22, where detecting fluorescence comprises performing one or more than one procedure selected from the group consisting of spectrometry, spectrofluorimetry, flow and static cytometry, fluorescence microscopy and gel electrophoresis.

25. The method of claim 17, where the thiophene oligomers provided comprise a plurality of thiophene oligomers with different emission frequencies, and where detecting fluorescence comprises simultaneously exciting the thiophene oligomers, through one or more than one emissive radiation source.

26. A conjugate comprising a thiophene oligomer according to claim 19 covalently bound to an organic molecule or to a biological molecule.

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#### REMARKS

Claims 1-13 are pending in the present application. Claims 1-13 were subject to a Restriction Requirement. Claim 8-13 are canceled, claims 1-7 are amended and new claims 14-26 are added by this Response and Amendment. No new matter is added by this Response and Amendment. Entry of these amendments is hereby requested.